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ABSTRACT

This study investigated the comparative effects of 2 distinct school environments (state university campus schools and local public schools) on the verbalization and socialization skills of disadvantaged kindergarten children with and without a Head Start background. If significant effects occurred, it was hoped that environmental factors that encourage maintenance of significant residual effects from the Head Start experience could be identified. The 75 subjects were distributed in five treatment groups: (1) campus school, high SES; (2) campus school, low SES, Head Start background; (3) public school, high SES; (4) public school, low SES, Head Start background; and (5) public school, low SES, without Head Start background. Verbal and social skills were assessed by pre- and posttests on the Illinois Test of Psycholinguistic Abilities, the Metropolitan Reading Readiness Test, and the Vineland Social Maturity Scale. Analysis of variance treatment of the data revealed no residual Head Start effects. The only significant effect possibly attributable to school environment was that the children in the campus school exhibited greater social growth than those in the public school. (MH)

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FINAL REPORT

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THE EFFECTS OF SCHOOL ENVIRONMENT ON DISADVANTAGED KINDERGARTEN CHILDREN, WITH AND WITHOUT A HEAD START BACKGROUND

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Contents

Summary	1
Introduction	2
Methods	4
Analysis	5
Conclusions	16
Recommendations	18
References	19

Figures

1 Fall and spring mean scores of the five groups on the Vineland Social Maturity Scale	6
2 Fall and spring mean total scores of the five groups on the Illinois Test of Psycholinguistic Abilities; subscales, auditory-Vocal Automatic, auditory-vocal association, and auditory decoding	9
3 Fall and spring mean total scores of the five groups on the first six subscales of the Metropolitan Readiness Test	12

Tables

I Planned comparison analysis of variance of fall social maturity scores (Vineland)	7
II Planned comparison analysis of variance of growth scores	8
III Planned comparison analysis of variance of fall ITPA scores	10
IV Planned comparison analysis of variance of ITPA growth scores	11
V Planned comparisons analysis of variance of Metropoli- tan fall data on available groups	13
VI Planned comparisons analysis of variance of Metropoli- tan growth data on available groups	14

Summary

Problem: The comparative effects of two distinct school environments on verbal and social growth of children with and without a Headstart background were studied. If significant effects occurred, it was hoped that those environmental elements enhancing any positive residual effects of Headstart could be identified and used in future research and educational programs.

Design and Procedure: There were five treatment groups - two in the WSU-0 campus school and three in the Oshkosh public schools. There was a high socio-economic status (SES) group in each environment, a low SES group with Headstart in each environment, and a low SES group without Headstart in the public schools. Verbal and social skills were measured in the fall and at the end of kindergarten by means of the Illinois Test of Psycholinguistic Abilities, the Metropolitan Reading Readiness Test, and the Vineland Social Maturity Scale. Statistical analysis consisted of planned comparisons analyses of variance as presented by William Hays (1963, 462-483).

Findings: No significant residual effects of the Headstart experience were observed. There was only one significant effect possibly attributable to school environment: children in the campus school showed greater social growth than children in the public school. Even this effect may well be a tester bias phenomenon.

Conclusion: In order to study the effects of school environment, radically different school environments should be deliberately constructed on the basis of learning theory rather than attempting to compare existing environments. Headstart, kindergarten, and primary grades would probably benefit considerably from this approach.

Although the Head Start experience provides activities conducive to developing an experiential background for deficient pre-school children, the question arises as to whether this "one-shot" pre-school opportunity is enough to maintain Head Start gains. The White House Conference on Education (Hechinger, 1966, p. 10) has evidence that the advantages gained are quickly lost. Unless the Head Start process is continued and successfully inducted into the majority culture of the regular school the early gains quickly turn into illusion and frustration.

Records of school failure provide evidence that educationally deprived children do not do well in the regular school program. (Butler, 1965, p. 4.). Program goals are unrealistic for deprived children as they do not have the background to profit from the experience offered. A real conflict exists for kindergarten teachers who try to help children achieve success by teaching them skills and concepts beyond their level of comprehension. Small deficiencies developing at an early age lead to inferior learning which in turn increases the magnitude of the deficiency. Deutsch refers to it as a "cumulative deficit" (Bereiter and Engelmann, 1966, p. 5) which becomes progressively worse as children continue in the regular school program.

The present research was not an attempt to study the effects of either the home or the neighborhood environments. It was an attempt to study the effects of the two radically distinct but neither necessarily deficient school environments. It was the hope of the researchers to measure the effects of these two environments on verbalization and socialization skills so that those elements of each that appear conducive to enhancing any positive residual effects of Head Start can be identified and deliberately used in future research and in future educational programs.

The first major purpose of this study was to determine the effects of two specific types of school environment on the verbalization and socialization skills of disadvantaged kindergarten children. The second major purpose of this study was to determine whether or not there were significant residual effects on the verbalization and socialization skills of disadvantaged kindergarten children resulting from having had the local Head Start experience.

Methods

Independent Variables

The design of the study consisted of five treatment cells. This design can be considered an incomplete factorial having five of eight cells of a 2x2x2 design. The three independent variables were:

1) socio-economic level, upper (U) versus lower (L); 2) Head Start experience (H) versus non-Head Start experience (Nh); and 3) school attended, Campus Laboratory School (C) versus non-Campus School (Nc). The five cells of the design were:

Group I.	U	Nh	C
II.	U	Nh	Nc
III.	L	H	C
IV.	L	H	Nc
V.	L	H	Nc

The three missing cells of the design were:

1.	U	H	C
2.	U	H	Nc
3.	L	Nh	C

The first two cells could not be filled because Head Start excludes children from upper socio-economic levels. The third could not be filled for this study because the regular campus school enrollment did not contain children from the lower socio-economic levels.

There were 75 in the main data analysis, 15 per cell of the design. Partial data was collected on twelve other Ss, but this data was incomplete due to attrition in the form of children moving or being absent during testing. The first cell contained the regular Laboratory School kindergarten children. The second cell contained children of high socio-economic status selected from the Oshkosh public schools. The third cell contained children with Head Start background randomly selected from the group of 48 children in the city of Oshkosh who have had Head Start experience. The original 48 children were randomly selected from the population in the city of Oshkosh who fit OEO's criteria for cultural deprivation.

Cell IV contained children randomly selected from the remaining 26 children with Head Start experience.

Cell III was, in effect, the experimental cell while the remaining four cells represented varying degrees of control groups.

Dependent Variables

The two dependent variables of this study were level of verbal and level of social growth. Verbal growth was measured by the experimental

edition of the Illinois Test of Psycho-linguistic Abilities, subscales Auditory-Vocal Automatic, Auditory-Vocal Association, and Auditory Decoding. Social growth was measured by the Vineland Social Maturity Scale. Measures were obtained both at the beginning and at the end of kindergarten. The raw data from the fall measurement was analyzed according to the analysis presented below. In addition to the originally proposed data, additional data was gathered in the form of the Metropolitan Reading Readiness tests. It was observed by the researcher that this data would be available as corroborating or disconfirming evidence because it was collected as a matter of course for every child in the schools of Oshkosh at the end of his kindergarten year. Partial Metropolitan data was obtained during the fall data collection. (Due to problems of scheduling, data was collected on all public school children but only on nine children in the campus school in the fall data collection.) Complete Metropolitan data was obtained during the spring data collection.

Analysis

The raw data from the fall measurement was analyzed to determine already existing significant differences between groups. The fall measurement would particularly have shown any significant residual effects of the Head Start program.

The actual growth measures used were difference scores--the difference for each subject between his fall measurement and his spring measurement.

The use of difference scores had two advantages. First it removed from consideration the covariation between the fall and the spring scores. That is, if the unwanted difference between Groups I and II were significant in the fall, it would be likely to still be significant in the spring. A difference score between the fall and the spring measure would not be affected by a constant difference between groups. Second, the difference score focused attention on the rate of growth during the year rather than on total growth up to and including the year under consideration.

The basic results of the study are graphically depicted in Figures 1, 2, and 3. The method of analysis used was that of multiple planned comparisons (Hays, 1963, pp. 462-483) done in the manner initially proposed in the research proposal transmitted on August 20, 1968.

Only the analysis of the totals of the subscales of the Illinois Test of Psycholinguistic Abilities (ITPA) and the subscales of the Metropolitan Reading Readiness Tests are presented in this report.

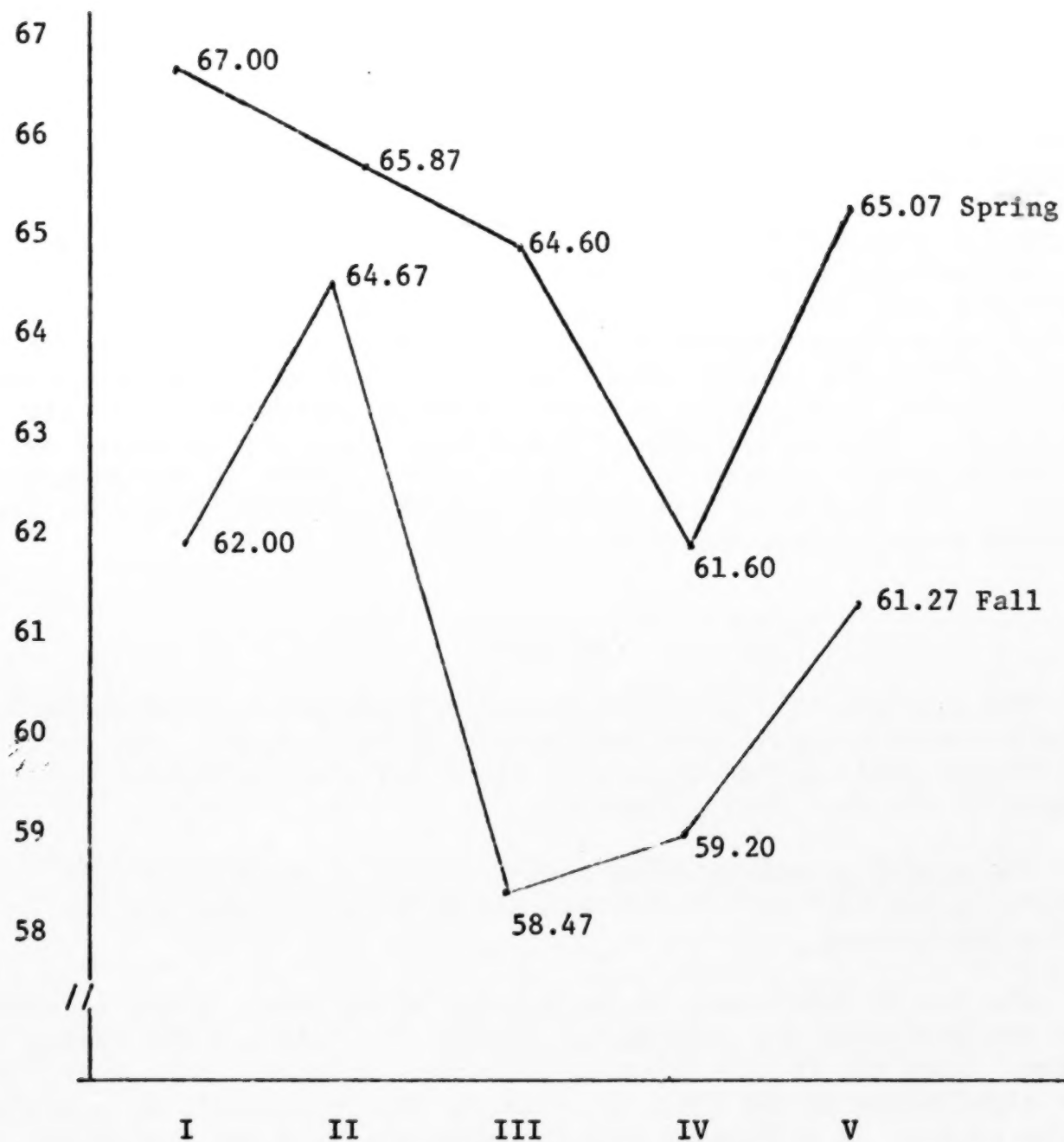


Figure 1. Fall and spring mean scores of the five groups on the Vineland Social Maturity Scale.

Table I

Planned comparison analysis of variance of
fall social maturity scores (Vineland)

Source	MS	df	F
Between groups	90.5	4	9.14
Comparison:			
1. Group I vs. Group II		1	5.39*
2. III IV		1	.581
3. III and IV vs. V		1	5.65*
4. I and II vs. III, IV and V		1	24.74**
Within groups	9.9	70	

* = $p < .05$

** = $p < .01$

Table II
Planned comparison analysis of variance
of growth scores

Source	MS	df	F
Between groups	58.35	4	3.69
Comparison:			
1. I vs II	4	1	6.85*
2. III vs IV		1	6.60*
3. III and IV vs V		1	< 1
4. I and II vs III, IV and V		1	1.16
Within groups	15.8	70	

* = $p < .05$

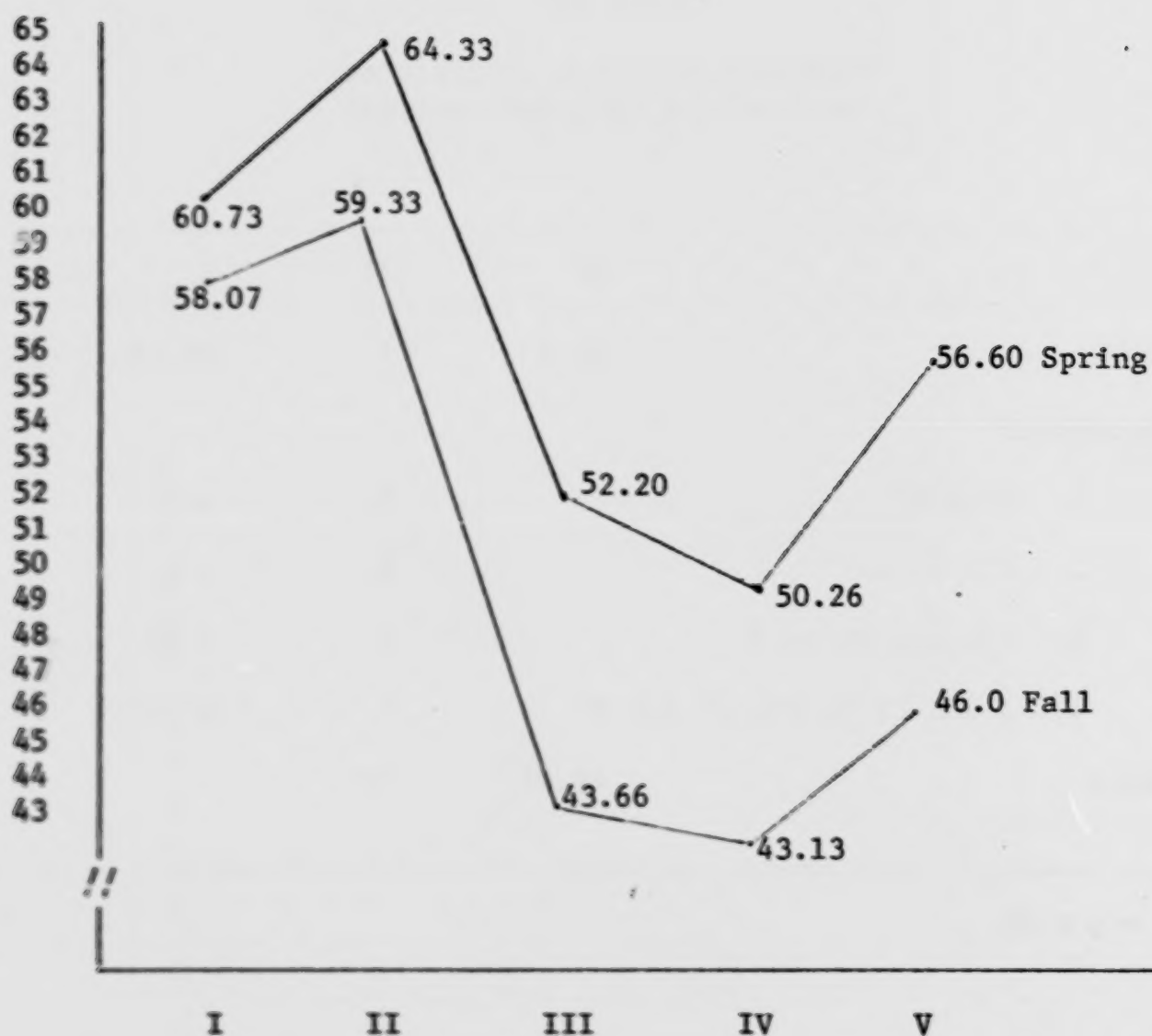


Figure 2. Fall and spring mean total scores of the five groups on the Illinois Test of Psycholinguistic Abilities; subscales, auditory-Vocal Automatic, auditory-vocal association, and auditory decoding.

Table III

Planned comparison analysis of
variance of fall ITPA scores

Source	MS	df	F
Between groups	95.8	4	14.59
Comparison:			
1. I vs II		1	<1
2. III vs IV		1	<1
3. III and IV vs V		1	1.03
4. I and II vs III,IV and V		1	57.10**
Within	65.64	70	

** = $p < .01$

Table IV

Planned comparison analysis of variance
of ITPA growth scores

Source	MS	df	F
Between groups	147.35	4	2.49
Comparison:			
1. I vs II		1	<1
2. III vs IV		1	<1
3. III and IV vs V		1	1.30
4. I and II vs III, IV and V		1	7.38**
Within		70	

** = $p < .01$

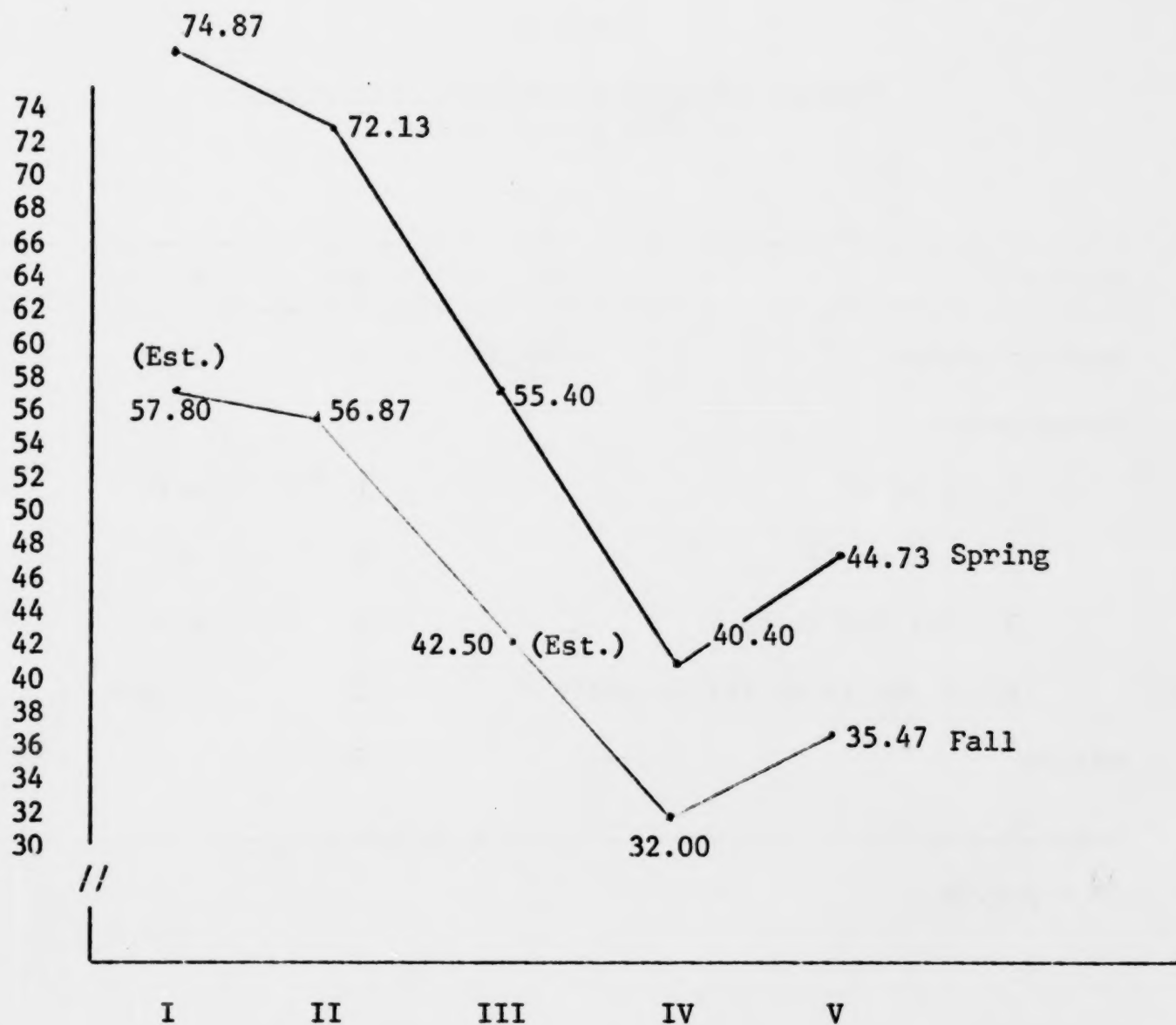


Figure 3. Fall and spring mean total scores of the five groups on the first six subscales of the Metropolitan Reading Readiness Test.

Table V

Planned comparisons analysis of variance of
Metropolitan fall data on available groups

Source	MS	df	F
Between groups	2721.1	2	11.71
Comparison			
1. IV vs V		1	<1
2. II vs IV and V		1	23.02**
Within groups	232.36	42	

** = $p < .01$

Table VI

Planned comparisons analysis of variance of
Metropolitan growth data on
available groups

Source	MS	df	F
Between groups	209.75	2	6.06
1. IV vs V		1	<1
2. II vs IV and V		1	11.83**
Within groups	34.61		

** = $p < .01$

There were no important differences observed differentiating subscale results from total results. The ITPA subscales that were combined for the ITPA total were Auditory-Vocal Automatic; Auditory-Vocal association; and Auditory Decoding. The first six subscales of the Metropolitan were used.

Social Maturity Results

Figure 1 and the first comparison in Table I, show that the investigators were not too successful in equating the social maturity of groups I and II at the start of study. An alternative possibility presented in the discussion section is that tester bias may have affected Group I.

Figure 1 and Table I, comparison 2, show that the investigators were reasonably successful in equating groups III and IV on the fall measure.

Figure 1 and Table I, comparison 3, show that the children with Head Start experience were significantly lower in measured social maturity than the children from poor background without Head Start experience.

Figure 1 and Table I, comparison 4, demonstrate a significant difference in measured social maturity at the beginning of the study favoring the children in the upper socioeconomic status (SES) Groups I and II.

Figure 1 and Table II, comparisons 1 and 2 indicate that there was a faster rate of social growth for the children in the campus school environment than for the children in the public school environment during the kindergarten year.

ITPA Results

Figure 2 and Tables III and IV show that on the ITPA, lower SES children started began the academic year behind upper SES children but made significantly more gains.

Metropolitan Results

Figure 3 and Tables V and VI show that the upper SES children had significantly more than lower SES children of those academic skills that were measured by the Metropolitan Reading Readiness Test. Upper SES children also gained significantly more in these areas than lower SES children.

The fall Metropolitan data for Groups I and III presented in figure 3 are estimates based on 5 subjects tested from Group I and 4 subjects tested from Group II. The fall estimates show the same relationship as the spring data and so are probably reasonably accurate.

Conclusions

As stated earlier, the first major purpose of this study was to determine the effects of two types of school environment on the verbalization and socialization skills of disadvantaged kindergarten children. The answer seems to be that for all practical purposes these differences are insignificant.

The one effect that is possibly important is that shown in Table II, comparisons I and II, indicating a somewhat faster rate of social growth during kindergarten for children in the campus school. This effect is completely reasonable, simply because in the campus school there are many practice teachers which results in a much lower pupil-teacher ratio and in much more child-adult interaction than would be found in the typical public school classroom where there is typically one teacher for twenty-five to thirty children. Such interaction should produce faster social growth as measured by the Vineland Social Maturity Scale.

Even this one possibly important result is dubious due to the possibility of tester bias. Although an attempt was made to control the effects of tester bias through careful training of testing personnel, it is possible that there were tester bias effects, particularly in the fall data collection. Such effects are most likely to appear in the Vineland Social Maturity data because items of this scale depend heavily on the judgement of the tester for scoring.

The fall data is most apt to show tester bias effects because the team of testers in the fall were advanced university students fitting their testing into their class schedules with the net result that the testers were not equally distributed through all cells of the design. However, in the spring data collection, the testers were wives of university faculty members going from school to school operating as a team with the net result of a balanced distribution of testers across the five cells of the design.

In conclusion, it seems likely that for all practical purposes the two school environments do not have different effects on verbal and social growth of kindergarten children.

The second major purpose of this study was to determine whether or not there were significant residual effects on the verbalization and socialization skills of disadvantaged kindergarten children resulting from having had the local Head Start experience.

As is clearly shown in the tables and figures, no significant positive residual effects of Head Start were found in the present study. The fact that on the fall measure of social maturity the Head Start children were significantly lower than the comparison group without Head Start merely underscores this finding.

It is probable that there are many positive effects of Head Start that were not examined in this study. It is also probable that the Head Start children in the present study represented the "bottom of the barrel" in terms of home and neighborhood environments and that the comparison, lower SES, group was in fact somewhat better off in terms of these environments than the Head Start children despite the best efforts of the experimenter to equate the Head Start groups with their lower SES comparison group. The finding of no measured positive residual effects of Head Start is in agreement with the results of many Head Start centers as reported by the Westinghouse Learning Corporation (1969).

One unanticipated result of the present study was that on the ITPA, lower SES children gained more than upper SES children. This is possibly a "ceiling effect" resulting from upper SES children being considerably closer to the highest possible scores on the ITPA than the lower SES children. Another probable explanation is that the lower SES children made more rapid growth in verbal skills during the year because they were forced by teachers and upper SES peers to learn and use verbal skills that they had not felt the need for in the home.

The fact that upper SES children improved more on the Metropolitan than lower SES children indicates that the upper SES children profited more from the academic training given during kindergarten than the lower SES children. It also indicates that the ITPA is not measuring the same skills as the Metropolitan. Perhaps the home environment of upper SES children lays greater stress on bringing home concrete evidence of learning activities during kindergarten with the result that

these children feel more strongly the need to excell in skills measured by the Metropolitan.

In conclusion, it seems likely that the verbal skills measured by the ITPA are somewhat different from those measured by the Metropolitan.

Recommendations

If there in fact is a true social growth effect (which is a reasonable explanation based on the data and the nature of the two environments), it indicates a need for teacher aides in public school kindergartens to facilitate more child-adult interaction by lowering the pupil-adult ratio. These aides could be paid paraprofessionals but do not have to be. Mothers and also high school students planning to enter kindergarten and primary level teaching could serve as volunteers in a program to give the kindergarten teacher the aides she needs.

Because there was little in the way of measured differential effects of the two school environments, it is recommended that in future research radically different experimental school environments should be deliberately constructed on the basis of learning theory rather than attempting to compare existing non-experimental environments. The Bereiter-Engelmann (1966) approach is such an approach and to date is the only experimental program dealing with disadvantaged children that claims strong and lasting positive effects.

One problem with the current study and also with the Westinghouse Learning Corporation data is that both made use of an ex post facto design. If the method of evaluation had been planned in advance of the Head Start experience rather than waiting until it was complete, the experimental treatment and controls would have been more precisely developed and the results would probably have been more favorable to Head Start. One recommendation coming, therefore, from the present study is that planned longitudinal research covering years, should be done with planned and controlled educational environments so that the effects of deliberate experimental changes in educational environment can be gauged.

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